CLAIMS

We claim:

1. A spreading system comprising:

a first spreader configured and arranged to produce a first spread signal based on a first data signal;

a second spreader configured and arranged to produce a second spread signal based on a second data signal;

a filter configured and arranged to produce a filtered signal based on the first spread signal; and

an adder configured and arranged to produce a digital sum signal based on the filtered signal and the second spread signal.

2. The spreading system according to claim 1, wherein the width of the filtered signal is greater than one bit.

3. The spreading system according to claim 2, wherein the width of the first spread signal is one bit.

4. The spreading system according to claim 1, wherein the first spreader is configured and arranged to spread the first data signal with a first pseudonoise sequence, and

wherein the second spreader is configured and arranged to spread the second data signal with a second pseudonoise sequence, and

wherein the second pseudonoise sequence is different than the first pseudonoise sequence.

5. The spreading system according to claim 4, wherein the width of the filtered signal is greater than one bit, and

wherein the width of the first spread signal is one bit.

6. The spreading system according to claim 1, wherein the first spreader includes an exclusive-or gate.

7. The spreading system according to claim 1, the spreading system further comprising a gain element configured and arranged to produce a controlled signal based on the second spread signal,

wherein the digital sum signal is based on the filtered signal and the controlled signal.

8. The spreading system according to claim 7, wherein the gain element includes a multiplier.

9. The spreading system according to claim 7, wherein the width of the filtered signal is greater than one bit, and

wherein the width of the first spread signal is one bit.

10. The spreading system according to claim 1, the spreading system further comprising a gain element configured and arranged to produce a controlled signal based on the filtered signal,

wherein the digital sum signal is based on the controlled signal and the second spread signal.

11. The spreading system according to claim 10, wherein the gain element includes a multiplier.

12. The spreading system according to claim 1, the spreading system further comprising a second filter configured and arranged to produce a second filtered signal based on the second spread signal,

wherein the digital sum signal is based on the filtered signal and the second filtered signal.

13. The spreading system according to claim 12, wherein the width of the filtered signal is greater than one bit, and

wherein the width of the first spread signal is one bit.

14. The spreading system according to claim 1, wherein the filter comprises a lowpass filter having a cutoff frequency substantially equal to one-half of a bit rate of the first spread signal.

15. The spreading system according to claim 1, further comprising:

a third spreader configured and arranged to produce a third spread signal based on the first data signal;

a fourth spreader configured and arranged to produce a fourth spread signal based on the second data signal; and

a second adder configured and arranged to produce a digital sum signal based on the third and fourth spread signals.

16. The spreading system according to claim 15, wherein the width of the filtered signal is greater than one bit, and

wherein the width of the first spread signal is one bit.

17. The spreading system according to claim 15, wherein the fourth spreader is configured and arranged to spread the second data signal with a first pseudonoise sequence, and

wherein the third spreader is configured and arranged to spread the first data signal with a second pseudonoise sequence, and

wherein the second pseudonoise sequence is different than the first pseudonoise sequence.

18. The spreading system according to claim 17, wherein the first spreader is configured and arranged to spread the first data signal with the first pseudonoise sequence, and

wherein the second spreader is configured and arranged to spread the second data signal with the second pseudonoise sequence.

19. The spreading system according to claim 18, wherein the width of the filtered signal is greater than one bit, and

wherein the width of the first spread signal is one bit.

20. A method of digital signal processing, the method comprising:

spreading a first data signal to obtain a first spread signal;

spreading a second data signal to obtain a second spread signal;

filtering the first spread signal to obtain a filtered signal; and

adding a signal based on the filtered signal and a signal based on the second spread signal to obtain a digital sum signal.

21. The method of digital signal processing according to claim 20, wherein the spreading a first data signal includes spreading the first data signal with a first pseudonoise sequence, and

wherein the spreading a second data signal includes spreading the second data signal with a second pseudonoise sequence, and

wherein the second pseudonoise sequence is different than the first pseudonoise sequence.

22. The method of digital signal processing according to claim 20, wherein the width of the filtered signal is greater than one bit.

23. The method of digital signal processing according to claim 22, wherein the width of the first spread signal is one bit.

24. The method of digital signal processing according to claim 20, wherein the spreading a first data signal comprises performing an exclusive-OR operation having the first data signal and a pseudonoise sequence as inputs and having the first spread signal as an output.

25. The method of digital signal processing according to claim 20, the method further comprising multiplying the filtered signal by a gain factor to obtain a controlled signal,

wherein the adding a signal based on the filtered signal and a signal based on the second spread signal includes adding a signal based on the controlled signal and a signal based on the second spread signal.

26. The method of digital signal processing according to claim 20, the method further comprising multiplying a signal based on the second spread signal by a gain factor to obtain a controlled signal,

wherein the adding a signal based on the filtered signal and a signal based on the second spread signal includes adding a signal based on the filtered signal and a signal based on the controlled signal.

27. The method of digital signal processing according to claim 20, the method further comprising:

spreading the first data signal to obtain a third spread signal;

spreading the second data signal to obtain a fourth spread signal; and

adding a signal based on the third spread signal and a signal based on the fourth spread signal to obtain a second digital sum signal.

28. The method of digital signal processing according to claim 27, wherein the spreading the first data signal to obtain a first spread signal includes spreading the first data signal with a first pseudonoise sequence, and

wherein the spreading a second data signal to obtain a second spread signal includes spreading the second data signal with a second pseudonoise sequence, and

wherein the spreading the first data signal to obtain a third spread signal includes spreading the first data signal with the second pseudonoise sequence, and

wherein the spreading the second data signal to obtain a fourth spread signal includes spreading the second data signal with the first pseudonoise sequence, and

wherein the second pseudonoise sequence is different than the first pseudonoise sequence.